

Proactive by Design

GEOTECHNICAL

ENVIRONMENTAL

ECOLOGICAL

WATER

CONSTRUCTION MANAGEMENT



MEMORANDUM

TO: Josephine Acevedo Esquilin, PREQB

FROM: James Roehrig, GZA

John Colbert, GZA Charles Lindberg, GZA

CC: Roger Anderson, TRC

Jeffrey Miller, HP Inc. Socorro Martinez, USEPA

Carmelo Vazquez Fernandez, PREQB Manual Claudio Rodriguez, PREQB

DATE: January 12, 2018

RE: Response to Request for Information

PREPA Off Site Monitoring Wells HP Inc. Voluntary Remediation Project

San German, Puerto Rico

In response to your December 12, 2017, email, GZA GeoEnvironmental, Inc., on behalf of HP Inc., has prepared the following memorandum regarding the off-property monitoring wells (GZ-507R, GZ-508R, GZ-509R, GZ-510R, GZ-512R, and GZ-513R) which were installed on the Puerto Rico Electrical Power Authority (PREPA) property.

RESPONSE TO PREQB'S REQUEST FOR INFORMATION

Puerto Rico Environmental Quality Board (EQB) information requests are presented in italic font, followed by GZA's responses.

In order to visualize the extent of the chlorinated volatile organic compounds (cVOCs) contamination at HP Inc. Voluntary Remediation Project site at San Germán, the Puerto Rico Environmental Quality Board (EQB) requests the following information regarding the former monitoring wells (GZ-507R, GZ-508R, GZ-509R, GZ-510R, GZ-512R and GZ-513R) located in the Puerto Rico Electric Power Authority (PREPA) property:

1. History of installation these former wells

The off-property PREPA wells (GZ-507 series, GZ-508 series, GZ-509 series, GZ-510 series, GZ-512 series, and GZ-513 series) were installed between January 8, 2002 and February 6, 2002, as part of GZA's Phase IV - Hydrogeologic Investigation which occurred between 2000



and 2002. The Phase IV investigation was the final phase of a larger program termed the Y2K Hydrogeologic Investigation. This work was documented in a March 2003 report submitted to EQB.

A monitoring well construction permit application was submitted to the Department of Natural Resources (DNER) on September 28, 2000 for the installation of off-site monitoring wells. DNER issued permit number RO-28-09-00-PRP-70271 on November 11, 2000; this permit was subsequently extended on November 18, 2001. A well completion report was submitted to EQB on July 16, 2002 documenting the work and findings.

2. Who required the installation (if EQB or EPA)? With what purpose (e.g., contamination extent determination/delineation)?

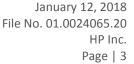
Our understanding is that the PREPA wells were installed as part of HP Inc.'s voluntary Phase IV Hydrogeologic Investigation, which was approved by EQB in February 2001. The objectives of the Phase IV investigation included "evaluation of possible presence of off-site contaminant sources; finalizing the delineation of downgradient flow and containment in fill, saprolite, and bedrock; and generation of design data for the possible upgrade of the on-Site extraction system." The work was part of the continuing efforts to further characterize the extent of groundwater impacts associated with historical site usage.

At the time of the PREPA monitoring well installation, Compaq (predecessor of Hewlett-Packard and HP Inc.) negotiated an access agreement with PREPA to obtain permission for well installation and groundwater sampling. Without PREPA's approval, the off-site investigation would not have been possible. PREPA's access conditions for the monitoring wells included, among other requirements:

- Restrictions on monitoring well analyses, reporting, and data validation. The specific chemicals to be reported included:
 - o Trichloroethylene
 - Vinyl chloride
 - o Cis-1,2-dichloroethylene
 - o Trans-1,2-dichloroethylene
 - o 1,1-Dichloroethylene
 - Tetrachloroethylene
 - o 1,2-Dichloroethane
 - o 1,1-Dichloroethane; and,
 - o Chloroform;
- Limitations on the number and locations of the monitoring wells;
- Restriction on property access; and,
- Closure of the wells after four quarterly sampling rounds, or one year, whichever occurs first.

3. Who did the installation?

The PREPA monitoring wells were installed by Geocim, Inc. The associated boring logs are attached to this memo for your convenience.





4. When were installed and when were in operation? For how long?

The wells were installed between January 9, 2002 and February 6, 2002. Quarterly groundwater sampling rounds were conducted in March, June, September, and December 2002, in accordance with the PREPA Access Agreement. After the December 2002 sampling round, the wells were decommissioned. In select wells (GZ-507R, GZ-508R, GZ-509R, GZ-510R, GZ-512R, and GZ-513R), pressure transducers were deployed during the decommissioning to allow for future collection of periodic groundwater elevation readings. To accomplish this, GZA and our subcontractor, Safety Construction, lowered two transducers into each selected well (for redundancy), backfilled the wells with filter sand to approximately one foot above the well screens, then grouted the wells up to the roadbox. The transducer wires and associated connectors were extended through the grout and left in the roadboxes to allow for future data downloads. The non-transducer wells were grouted to the surface, and the associated roadboxes were removed.

In 2016, the transducer wires and connections became corroded, making the transducers faulty and unusable (see attached Photographic Log)¹. However, by that time, other off-property monitoring wells had been installed providing downgradient groundwater elevation and quality data.

5. Who decided to put them off and why?

The wells were decommissioned in September 2003 in accordance with the contractual agreement with PREPA, which stated that "Compaq will close the wells after four (4) quarterly sampling rounds, or one (1) year, whichever occurs first...".

6. Available sampling data analysis results from these wells.

The PREPA wells were sampled on four occasions: March, June, September, and December 2002. Refer to the attached table containing associated analytical results.

We trust that this addresses your questions. If you have any further questions, please contact John Colbert at 781-278-5892 or via email at john.colbert@gza.com or Jeff Miller (HP Inc.) at 970-898-8803 or jeffrey.s.miller@hp.com.

Attachments:

- 1 Boring Logs
- 2 Photographic Log
- 3 Analytical Data Summary Table

_

¹ The issues with the transducers were described in the Q1-Q2 2016 Semi-Annual Status Report submitted in August 2016.



Attachment 1 - Boring Logs

	7	41	GeoE Engine	nvironn eers and S	nental, In	nc	Former Compaq Facility PREPA Off-Site W			File	No.: _	of 1 20876.55
Cor For Log Dat Bor	ntract reman gged l ite Sta ring L	tor: n: by: art/Fini .ocatio	ish: <u>1-1</u> on: <u>See E</u> NA	Geocim, Ir J. Caldero J. Feliciar 5-02 / 1- Exploration Datur	nc. ron no -16-02 n Location m; NGVI	Plan H	Auger/ Casing Type: Casing N/A O.D. / I.D.: 6"/4" Iammer Wt.: 300# Iammer Fall: 30" Other:	GF Date 01-22-02	ROUNDW Time 0945	ATE De	eck: R READ	DJA
_	ng		Samp Pen/	ple Inform		Field					Fauin	ment Installe
Depth	Casing Blows	No.	Rec.	Depth (Ft.)	Blows (/6")	Test Data (ppm)	Description & Classificat	tion	Stratum Desc.	Rmks.		12" CURBBOX
; · -							No sampling performed. See borin GZ-507R.	ng log		1 2		6" CUR 6 1/, BOREH CEME 4" 4 1/2" BOREHOI GROUT
												FILTER SAND
0'-												2" ID SCH, 4 PVC RISEF
5'-												
							Bottom of boring at 27 fo	eet.	27*			27'
				ced by 6-i		casing	g to 4 feet, and 4-inch spin casing to	27 feet.				

	4	1	GZA	nvironn	nental I	nc –	Former Compaq Facility Phase IV	Y		ring No. qe: 1	: GZ-507F of 2
6	- /		Engine	eers and S	cientists	_	7 PREPA Off-Site Wells			No.:	20876.55
Co	ntrac	tor: _		Geocim, I			Auger/ Sampler		Ch	eck:	DJA
	emai			J. Calder		_	U / Casing G	ROUNDW Time			OINGS Casing St
		by:		ciano / D. 9-02 / 1-1		_	Type: Casing SS Date 01-22-02			1.0	Casing St
Da Bo	ing I	ocatio	n: See E	Exploration	Location	Plan H	ammer Wt.: 300# 140#				
				_ Datur			lammer Fall: 30" 30"				
_							Other: 2-1/2" Core Barrel				
_	B s			ole Infor	nation	Field					
Depth	Casing Blows	No.	Pen/	Depth	Blows	Test	Sample	Stratum	(S.	Equip	ment Install
ă	CB	NO.	Rec.	(Ft.)	(/6")	Data	Description & Classification	Desc.	Rmks.		12" CURBBOX
-						(ppm)	10.1 T. 01.0.7	ASPHALT	_		
		S-1	24/18	0-2	8-7	0.1	S-1: Top 2": Stiff, compact, black, asphalt with rock fragments. Dry. Highly to	2"	1		1000
					31-27		thoroughly weathered, light gray/olive-gray,	37	2		6" CURI
		S-2	24/8	2-4	39-53	0.1	andesite breakdown to coarse, angular,		3	疆	6 1/2
					50/4"		gravel-size fragments, some sand. Dry. S-2: Same as above, throughly weathered,				BOREH TO 4
		S-3	12/6	4-6	49-	0.3	some hard, angular fragments, little oxidized				4' 10'
+		5-3	12/0	4-0		0.3	fissures. Dry.				
	_	To a S	- T		59/6"		S-3: Same as above, breaks down to sand with little silt. Dry.		18		
		S-4	12/8	6-8	33-	0.2	S-4: Throughly weathered, compact, light		4		- 4 1/2" BORE
					61/6"		olive to brownish yellow, Andesite, breaks		4		104
		S-5	12/8	8-10	31-	0.1	down into medium to coarse sand, Dry. S-5: Same as above, little to some hard				(3)
					64/6"		fragments.				3. (a)
)'-		S-6	5/5	10-12	60/5"	0.0	S-6: Same as above, little hard andesite				7.
1	-	0.0	970	10.12	00/0	0.0	fragments, light olive to light yellowish brown.	FRIABLE	118		
				-			Diowii.	HIGHLY WEATHERED,			CEMENT
								SEVERELY	1		BENTONI' GROUT
ı								FRACTURED, ANDESITE	18		GNOOT
		S-7	24/14	14-16	22-31	0.7	Highly weathered Andesite, light olive to brownish yellow, little open oxidized				
					50/5"		fractures.				
											Ž
								SAPROLITE	, TX		
								BEDROCK			
		0.0	10/0	10.01	20	0.5	Same as above, light olive, well preserved				2" 10
)		S-8	10/8	19-21	38-	0.5	rock grain structure.			100	SCH. 4 PVC
					50/4"						RISEF (0.5-44)
											10.5-44
											2
		S-9	8/6	24-26	49-	0.2	Same as above, little hard fragments.				
5'-		70.7			50/2"	-	The state of the s			100	
					30/2						-
1					-	-	-				
											F)
							Same as above, very light olive/yellowish				
- 1		S-10	12-10	29-31	21-33	0.5	brown.			摄影	

For	remar	tor: n: by:	J. Felic	eers and Si Geocim, In J. Calder Giano / D. Giano / 1-1	nc. on Adilman	=	PREPA Off-Site Wells Auger Sampler Gl	ROUNDW Time 0945	Che ATE De	No.: eck: _ R REA epth	DJA
Bo	ring L Elev	ocatio	n: See E NA	xploration Datur	n: NGV	Plan H	ammer Wt.: 300# 140# ammer Fall: 30" 30" Other: 2-1/2" Core Barrel				
Depth	Casing Blows	No.	Pen/ Rec. (In.)	Depth (Ft.)	Blows (/6")	Field Test Data (ppm)	Sample Description & Classification	Stratum Desc.	Rmks.	Equi	pment Installed
					50/2"						
								FRIABLE HIGHLY			
								WEATHERED, ANDESITE			
	-	0.44	0.5/0.5	04.00	22	0.0	Highly to thoroughly weathered, highly				BENTONI
5-		5-11	9.5/9.5	34-36	23-	0.0	fractured, light olive/yellowish brown, Andesite, some wet, oxidized fractures,		. 3	F.	GROUT
	-			-	30/2.3		breaks down to sand, gravel-size fragments.				
						-					
	1							38'	5	D.	38.5
		S-12	11/8	39-41	21-	0.5	S-12: Highly fractured to moderately crushed to highly weathered, light olive			1	
-0-		CORE			50/5"	V	Andesite, breaks down into coarse sand,				BENTONITE SEAL
		C-1	60/12	40-45	RQD=		gravel-size angular fragments. Run 1: Hard, highly weathered to fresh,	HIGHLY		0	41,5'
	1				0.0		highly to severly fractured, light olive to brown/light bluish to gray, andesite, some	FRACTURED ANDESITE			FILTER
							oxidized fractures joint surfaces.				PACK
154							Highly weathered to fresh, highly fractured				44.5'
		C-2	60/15	45-50	RQD =		to crushed, light olive to brown to light				Wall Company
					0.0		bluish gray, andesite with oxidated join surface.	AAA			
								4000	1	80/	
	_			-		-					BOREHOLI
504		C-3	60/10	50-55	RQD=		Same as above, some hydrothermal	-			
		U-3	80/10	90-99	0.0		alteration with chalcopyrite on oxidated joint surfaces.				
					0.0						
										6	
											2" II SCH.
554		C-4	60/4	55-60	RQD=		Same as above, sampled as gravel-size fragments.			06.00	PVC SCRE
					0.0		- reginence.				(0.01* S
							Bottom of boring at 60 feet.	1			59.5*
REVIARK	5. \$	Started	with 2.5	inch cor	e barrel a	it 1538	on 1-14-02. Switched from mud to water, OE) = 3.5 inc	ches.		

			GZA				Former Compaq I	Facility	Phase IV				o.: _ GZ	
C	5/		GeoF	Environn eers and S	nental, I	nc.	PREPA Off-				Pag	le:	1 of_ 2087	6.55
				Geocim, I		-	Augeri		2002					
		tor: 1:		J. Calder	on.	_	Casing S	ampler	GF	NOUNDW				
0	nned	bv:		J. Felicia		_	Type: Casing	N/A	Date	Time	De	pth	Casing	Sta
Da	te Sta	art/Fini	ish: 1-2	22-02 / 1-	-22-02		O.D. / 1.D.: 6"/4.5"		02-04-02	0950	14	.88		-
Во	ring L	ocatio	n: See E	Exploration	Location	Plan H	ammer Wt.:300#							
GS	Elev	.:	NA	Datur	n: NGV	<u>э</u> н	ammer Fall:30" Other:						-	
			Sam	ple Inform	mation		Other:							
=	ing		Pen/			Field		34		Stratum		Equ	ipment In	stalle
Depth	Casing Blows	No.	Rec. (In.)	Depth (Ft.)	Blows (/6")	Test Data (ppm)	Sampl Description & Cl		ion	Desc.	Rmks.	- 4	12" CURB	
o'-							No sampling performed. S				1 2		9' BEI	CEMENT CURBE 6 1/2* OREHOL CEMEN GROU' 4 1/2* REHOLE SEAL FILTER SAND 2* ID CH. 40 PVC CREEN 1* SLOT
o'-							Bottom of boring	g at 18 fe	ret.	18*			18'	
REMARKS							to 4 feet and 4-inch spin o 9 to 18 feet advanced wit							
Strat	ification inder co	lines repr	esent appro	oximate bour tuations of g	ndaries betw roundwater	een soil ty may occur	pes, transitions may be gradual. Wat due to other factors than those pre	ter level read	lings have been ime measureme	made at times nts were mad	e.	Borinç	No.: GZ	-5081

Boring No.: GZ-508R GZA GeoEnvironmental, Inc. Former Compaq Facility Phase IV Page: __1 of __2 PREPA Off-Site Wells Engineers and Scientists 20876.55 File No .: _ Geocim, Inc. Auger/ Check: DJA Contractor: _ Sampler J. Calderon Casing Foreman: **GROUNDWATER READINGS** Date Time J. Feliciano Type: Casing Depth SS Logged by: 01-25-02 0910 15.65 Date Start/Finish: 1-17-02 / 1-21-02 O.D. / I.D.: 4"/4.5" 2"/2.5" Boring Location: See Exploration Location Plan Hammer Wt.: _ 300# 140# Hammer Fall: 30" GS Elev .: NA __ Datum: NGVD Other: Col 15 Sample Information Depth Field Pen/ Equipment Installed Stratum Rmks. Depth Blows Sample Test No. Rec. (Ft.) (/6") Data Desc. **Description & Classification** (In.) 12" CURBBOX ppm ASPHALT S-1: Top 4": Stiff, compact, black, asphalt 24/18 S-1 0-2 36-21 0.7 with angular rock fragments. Very dense, FILL CEMENT 20-6 compact, olive-gray, rock fragments in a 6" CURBBOX silty sand matrix, gravel sized. Fill. Dry. 2 24/20 2-4 7-6 5.2 2.4 6 1/2" S-2: Medium to stiff, olive and bluish gray, BOREHOLE 12-6 CLAY, little to some rounded gravel, little sand. Slightly moist. 24/15 4-4 0.1 S-3 4.6 ALUVIUM S-3: Top 11": Soft to medium, very dark 5 6-6 gray, CLAY, little Silt, trace Sand, moderately organic. Lower 4": Medium to stiff, 4 1/2" S-4 24/24 4-4 olive to yellowish brown, CLAY, trace Sand. BOREHOLE S-4: Top 6": Soft to medium, very dark 6-9 gray, organic CLAY, Moist, Bottom 18": 5-5 24/20 8-10 3-3 0.1 Medium to stiff, yellowish brown to light 2 olive, CLAY, trace to little Sand. 5-6 9.5 10 S-5: Top 6": Soft to medium, yellowish brown, CLAY and dark gray, organic Clay. Bottom 14": Medium dense to stiff, SAPROLITE yellowish brown-olive, CLAY, little Silt, trace CEMENT/ Sand. Moist. BENTONITE Highly to thoroughly weathered, light olive to 5-6 24/14 14-16 12-41 0.8 15 yellowish brown, brown, volcanic rock, 40-25 145 breaks down to a compact gravelly CLAY with some hard rock fragments, dark gray, HIGHLY TO THORolive. DUGHLY VEATHERED ROCK 3 Same as above, some hard, bluish gray 11/11 0.5 19-21 18-3 1/2" 20 4 CORE BOREHOLE 20 50/5" 5 BARRE BENTONITE Very hard, highly weathered to fresh, bluish 21.5' SEAL C-1 36/18 20-23 RQD= BEDBOCK gray-olive, white andesite with oxidated joint HIGHLY TO 0.0 SEVERELY surfaces. FRACTURED 6 FILTER TO HIGHLY PACK WEATHERED ANDESITE 25 Very hard, highly to severely fractured, C-2 60/35 23-28 RQD = white, light olive, bluish gray andesite 2" ID 0.0 porphy, oxidated joint surfaces. SCH. 40

R
1. Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of sealed soil sample jars using a 5808 organic vapor meter equipped with a photoionization detector (PID) and 10.7 eV lamp. Results in parts per million by volume (ppmy). ND indicates nothing detected (<0.1 ppmy). PID background reading = 0.5 ppm.

Hard, moderately weathered, moderately to

highly fractured, bluish gray, white, andesite, some oxidized, high angle fractures.

2. Tested drilling mud for VOCs with PID at 1350, total of 0.03 ppm.

BOD =

A 3. Stopped spin casing with mud at 19 feet. Refusal of sampler at 19.5 feet.

R 4. Replaced drilling mud with clean water.

60/40

C-3

K 5. Started coring at 20 feet on 1-18-02 at 0745 with 2.5-inch core barrel.

S 6. Rock fragment stuck in diamond bit at 23 feet.

28-33

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made

Boring No.: GZ-508R

SCREEN

(0.01" SLOT)

甜

(4		GZA GeoE Engine	invironn eers and S	nental, I	nc. –	Former Compaq Facility Phase PREPA Off-Site Wells	se IV	_	Pag	ng No.: e:2 No.:	of_ 20876	2 3.55
For Log Da Bo	remar gged te St ring L	n: by: art/Fin .ocatio	ish: <u>1-1</u> n: See I	_ Datur	ron ano -21-02 Location m; NGVI		Type, casing 55	ate Tir	NDW/ me	ATE De	ck: R READ oth (Stab
Depth	Casing Blows	No.	Pen/ Rec. (In.)	Depth (Ft.)	Blows (/6")	Field Test Data (ppm)	Sample Description & Classification		ntum sc.	Rmks.	Equipr	nent In	stalled
35∸		C-4	60/23	33-38	RQD = 0.0 RQD =		Same as above, very hard andesite frag- ments, coarse gravel sized. Moderately weathered, moderately fract to massive, light bluish gray, Andesite.	HIG FRAC AND	GHLY TURED ESITE	7			— 3 1/2 BOREHO FILTER PACK
10:-					.58		Bottom of boring at 39.5 feet.	39.5'				39.	
154													
50-													
554													
R E M A R K S	7. 8	Started	core dril	ling at 33	B feet at (0730 or	1-21-02.						

	4	Z	GZA GeoE Engin	Environn eers and S	nental, I	nc. –	Former Compaq Facility Phase I' PREPA Off-Site Wells	V	Pag File	ring No.:GZ-509U ge:1of1 e No.:20876.55
For Log Da Bo	remar gged te Sta ring L Elev	by: art/Fin ocatio .:	M. P ish: <u>1-2</u> n: See	Geocim, I F. River Conti, D. A 25-02 / 1- Exploration Datur ple Infor	a Adilman -25-02 Location n: NGV	Plan H	Auger/ Casing Sampler Type: Casing NA Date O.D. / I.D.: 4"/4-1/2" ammer Wt.: Other:	GROUNDW Time	ATE	eck: DJA ER READINGS Epth Casing Stab
Depth	Casing Blows	No.	Pen/ Rec. (In.)	Depth (Ft.)	Blows (/6")	Field Test Data (ppm)	Sample Description & Classification	Stratum Desc.	Rmks.	Equipment Installed
5'-							Refer to Log GZ-509R for stratum descriptions.	4	1 2	CONCRETE 6 1/2" BOREHOLE BENTONITE SEAL 2" ID SCH. 40 PVC RISER (0-3') FILTER SAND 8'
0'-							Bottom of boring at 8.5 feet.	8.5'		8.5' 2* 1D SCH. 40 PVC SCREEN (0.01* SLOT) (3-8')
5'-										
0`-										
5'-										
R E M A R K	2, 1	No drilli	ing mud	was used	1.		to 4 feet and 4-inch spin casing to total dept			

Fo Lo Da Bo	entrac remai gged ate Staring L	tor: _ n: by: art/Fin ocatio	M. P ish: 1-2 n: See I NA	Geocim, I F. River onti, D. A 3-02 / 1- Exploration Datur	nc. a Adilman 24-02 Location n: NGV	Plan H	Type: O.D. / I.D.: lammer Wt.: lammer Fall:	4"/4-1/2"	Sampler NA		ROUNDW Time	Ch	eck: _	
Depth	Casing Blows	No.	Pen/ Rec. (In.)	Depth (Ft.)	Blows (/6")	Field Test Data (ppm)	Desc	San		on	Stratum Desc.	Rmks.	Equi	ipment In
5'-							No sampling GZ-509R for					1 2		B
10'-														10' B
15'-														14*
20'-														2 SCI
25'-									3 - 2					(0.01)
							Bot feet and 4-inch feet to total dep	spin casing		l.	29'			

Contractor: Geocim, fine. Finera Casing Type: Casing Sampler Date Start Fine Date Start Start Date Date Start Date Da	(1/	Z	GZA GeoI Engin	Environr eers and S	nental, I cientists	ne. –	Former Compaq Facility Phase IV San German, Puerto Rico		Pag	ring No ge: e No.: .	1 of	2 2 76.55
Sample Information Sample Sample Sample Sample Sample Description & Classification Description & Classificat	Fo Lo Da Bo	ntrac remai gged ite St ring L	tor: _ n: by: art/Fin Locatio	M. P lish: 1-1 on: See	F. River fonti, D. A 7-02 / 1- Exploration	a Adilman 25-02 Location	Plan H	Casing Sampler Type: Casing SS O.D. / I.D.: 6"/4" 2"/2-1/2" lammer Wt.: 300# 140# Iammer Fall: 30" 30"		ATE	R REA		Stab
S-1 24/12 0-2 25-39 ND S-1: Top 4': Asphalt. Very dense, brown, fine to medium SAND and Gravel fill. Bottom 4': Gray, fine to medium SAND and Gravel fill. Bottom 4': Gray, fine to medium SAND and Gravel fill. Bottom 4': Gray, fine to medium SAND and Gravel fill. Bottom 5': Cav. A standard fill. Bottom 4': Gray, fine to medium SAND and Gravel fill. Bottom 5': Cav. A standard fill. Bo	4	91		_	ple Infor	mation I	Field	other.	1 = 3				
1. 1. 1. 1. 1. 1. 1. 1.	Dept	Casir Blow	No.	Rec.	100,019.00	100000000000000000000000000000000000000	Test Data			Rmks,	1000	pment h	
10-11			S-1	24/12	0-2	25-39	ND			1			7
S-2 24/10 2-4 6-8 ND 5-2 Top 4": Medium dense, gray, fine to medium SAND and Gravel. Bottom: Stiff, alluvium). S-3 24/20 4-6 3-4 1.5 5-7 S-3 24/24 6-8 2-4 0.3 S-4 Stiff, park (CLAY and SLT, prose coarse Sand and Gravel (dry alluvium). S-5 S-7 24/24 8-10 2-2 ND S-5 S-7 24/24 8-10 2-2 ND S-5 Stiff, black, CLAY and SLT, trace fine Sand function of the stiff of the stiff of the stiff, black, CLAY and SLT, trace fine Sand function of the stiff of the stiff of the stiff, stiff, plack, CLAY and SLT, trace fine Sand function of the stiff of the stiff of the stiff of the stiff, st			1			10-11		4": Gray, fine to medium SAND and Gravel.		2		6	* CURBBOX
S-3 24/20 4-6 3-4 1.5	1 8		S-2	24/10	2-4	6-8	ND		2.3'				CONCRETE
S-3 24/20 4-6 3-4 1.5 Sand and Gravel (dry alluvium) S-3 Stiff, black, Organic CLAY and SILT (organic) ORGANIC ALLUVIUM S-4 Stiff, black, CLAY and SILT (organic) ORGANIC ALLUVIUM S-4 Stiff, black, CLAY and SILT (organic) S-5 24/24 8-10 2-2 ND S-5 Top 9': Medium stiff, black, CLAY & SILT, trace fine Sand (mottled) S-5 Top 9': Medium stiff, black, CLAY & SILT (organic) S-5 Top 9': Medium stiff, black, CLAY & SILT (organic) S-5 Top 9': Medium stiff, black, CLAY & SILT (organic) S-5 Top 9': Medium stiff, black, CLAY & SILT (organic) S-5 Top 9': Medium stiff, black, CLAY & SILT (organic) S-5 Top 9': Medium stiff, black, CLAY & SILT (organic) S-5 Top 9': Medium stiff, black, CLAY & SILT (organic) S-5 Top 9': Medium stiff, black, CLAY & SILT (organic) S-5 Top 9': Medium stiff, black, CLAY & SILT (organic) S-5 S-5 S-5 Top 9': Medium stiff, black, CLAY & SILT (organic) S-5 S-5 S-5 Top 9': Medium stiff, black, CLAY & SILT (organic) S-5						7-7		medium SAND and Gravel. Bottom: Stiff,		3			
S-4 24/24 6-8 2-4 0.3 Calluvium . S-4 SHIT, trace fine Sand Institution S-5 24/24 8-10 2-2 ND S-5 Top 9": Medium stiff, black, CLAY & SILT (organic). S-5 SHIT, trace fine Sand Institution S-6 SHIT (organic). S-6 SHIT, trace fine Sand, dark gray-black mortiles (alluvium). S-6 SHIT, gray-yellow brown, Silty CLAY, trace fine Sand, dark gray-black mortiles (alluvium). S-6 SHIT, gray-yellow brown, Silty CLAY, gray mortiled (saprolite). S-7 24/19 14-16 S-9 ND SHIT, gray-yellow brown, Silty CLAY, mortiled with laminated fine to medium Sand portings (saprolite). S-7 24/18 19-21 9-7 ND SHIT, gray-yellow orange, Silty CLAY, mortiled with laminated fine to medium Sand portings (saprolite). S-8 24/18 19-21 9-7 ND SHIT, gray-yellow orange, Silty CLAY, fine to coarse Sand, little fine Gravel (moderately weathered rock and saprolite). S-9 24/16 24-26 14-10 ND Shiff, gray-yellow orange, Silty CLAY, fine to coarse Sand, little fine Gravel (moderately weathered rock and saprolite). S-9 24/17 29-31 17-19 ND SHIT, olive-gray, moderately weathered S-8 SAPROLITE AND	5'-		S-3	24/20	4-6	3-4	1.5	Sand and Gravel (dry alluvium).	4'				_ 6 1/2* BOREHOLE _
S-4 24/24 6-8 2-4 0.3 S-4: Stiff, black, CLAY and SILT (organic). Bottom 6": CLAY & SILT, trace fine Sand (mottled). S-5 24/24 8-10 2-2 ND S-5: Top 9": Medium stiff, black, CLAY & SILT (organics). Bottom 15": Stiff, plack, CLAY & SILT (organic value). Bottom 15": Stiff, plack, CLAY & SILT (organic value). Bottom 15": Stiff, plack, CLAY & SILT (organic value). Bottom 15": Stiff, plack, CLAY & SILT (organic value). Bottom 15": Stiff, plack, CLAY & SILT (organic value). Bottom 15": Stiff, plack, CLAY & SILT (organic value). Bottom 15": Stiff, plack, CLAY & SILT (organic value). Bottom 15": Stiff, plack, CLAY & SILT (organic value). Bottom 15": Stiff, plack, CLAY & SILT (organic value). Bottom 15": Stiff, plack, CLAY & SILT (organic value). Bottom 15": Stiff, plack, CLAY & SILT (organic value). Bottom 15": Stiff, plack, CLAY & SILT (organic value). Bottom 15": Stiff, plack, CLAY & SILT (organic value). Bottom 15": Stiff, plack, CLAY &			1			6-7			ORGANIC				
S-5 24/24 8-10 2-2 ND S-5: Top 9": Medium stiff, black, CLAY & SILT forganics). Bottom 15": Stiff, yellow-brown, Silty CLAY, trace fine Sand, dark gray-black mottles (alluvium). S-6 24/20 10-12 3-6 ND 10-13 Setsiff, gray-yellow brown, Silty CLAY, gray mottled (saprolite). S-7 24/19 14-16 5-9 ND Very stiff, gray-yellow brown, Silty CLAY, gray mottled with laminated fine to medium Sand portings (saprolite). S-7 24/18 19-21 9-7 ND Stiff, gray-yellow orange, Silty CLAY, mottled with laminated fine to medium Sand portings (saprolite). S-8 24/18 19-21 9-7 ND Stiff, gray, Silty CLAY, fine to coarse Sand, little fine Gravel (moderately weathered rock and saprolite). S-9 24/16 24-26 14-10 ND Stiff, olive-gray, Silty CLAY, fine to coarse Sand, little fine Gravel. S-10 24/17 29-31 17-19 ND Very stiff, olive-gray, moderately weathered moderately weathered set of set using a 5808 organic vapor meter equipped with a photolonization detector (PID) and 10.7 eV lamp. Results in parts per milli (ppm). ND indicates nothing detected (<0.11 ppm/). PID background reading = 0.0 ppm. 1. Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 5808 organic vapor meter equipped with a photolonization detector (PID) and 10.7 eV lamp. Results in parts per milli (ppm/). ND indicates nothing detected (<0.11 ppm/). PID background reading = 0.0 ppm. 1. Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 5808 organic vapor meter equipped with a photolonization detector (PID) and 10.7 eV lamp. Results in parts per milli (ppm/). ND indicates nothing detected (<0.11 ppm/). PID background reading = 0.01 ppm. 2. Vater observed at 3 feet, while 6-inch casing at 4 feet. 3. Alluvium-saprolite transition between 8.5 and 10 feet below ground surface. Lesing mud at this depth. Pound 6-inch casing to the proper parts and the part of the parts and the parts and the parts and the parts and			S-4	24/24	6-8	2-4	0.3	S-4: Stiff, black, CLAY and SILT (organic).	ALLUVIUM			3	GROUT
S-5 24/24 8-10 2-2 ND S-5: Top 9*: Medium stiff, black, CLAY & SILT (organics). Bottom 15*: Stiff, yellow-brown, Silty CLAY, trace fine Sand, dark gray-black mottles (alluvium). S-6 24/20 10-12 3-6 ND 10-13 S-6: Stiff, gray-yellow brown, Silty CLAY, trace fine Sand, dark gray-black mottles (alluvium). S-6: Stiff, gray-yellow brown, Silty CLAY, mottled with laminated fine to medium Sand portings (saprolite). S-7 24/19 14-16 5-9 ND Very stiff, gray-yellow orange, Silty CLAY, mottled with laminated fine to medium Sand portings (saprolite). S-8 24/18 19-21 9-7 ND little fine Gravel (moderately weathered rock and saprolite). S-9 24/16 24-26 14-10 ND Stiff, olive-gray, Silty CLAY, fine to coarse Sand, little fine Gravel. SAPROLITE SAPROLITE AND GEOROGIC SAPRO							-		0.51	4			
brown, Sitty CLAY, trace fine Sand, dark gray-black mottles (alluvium). S-6: Stiff, gray-yellow brown, Sitty CLAY, gray mottled (saprolite). S-7 24/19 14-16 5-9 ND Very stiff, gray-yellow orange, Sitty CLAY, mottled with laminated fine to medium Sand portings (saprolite). S-8 24/18 19-21 9-7 ND Stiff, gray-yellow orange, Sitty CLAY, mottled with laminated fine to medium Sand portings (saprolite). S-8 24/18 19-21 9-7 ND Stiff, gray-yellow orange, Sitty CLAY, mottled with laminated fine to medium Sand portings (saprolite). S-8 24/18 19-21 9-7 ND Stiff, gray-yellow orange, Sitty CLAY, fine to coarse Sand, little fine Gravel (moderately weathered rock and saprolite). S-9 24/16 24-26 14-10 ND Stiff, olive-gray, Sitty CLAY, fine to coarse Sand, little fine Gravel. S-9 14 Sand, little fine Gravel. S-9 15 Sand, little fine Gravel. S-9 16 Sand, little fine Gravel. S-9 17 Sand, little fine Gravel. S-9 18 Sand, little fine Sand, make a sand, little fine Gravel. S-9 18 Sand, little fine Sand, make a sand, little fine Sand, make a sand, little f			S-5	24/24	8-10		ND				No.	9.	
S-7 24/19 14-16 5-9 ND Very stiff, gray-yellow brown, Silty CLAY, mottled (saprolite). S-7 24/19 14-16 5-9 ND Very stiff, gray-yellow brown, Silty CLAY, mottled with laminated fine to medium Sand portings (saprolite). S-8 24/18 19-21 9-7 ND Stiff, gray, Silty CLAY, fine to coarse Sand, little fine Gravel (moderately weathered rock and saprolite). S-9 24/16 24-26 14-10 ND Stiff, olive-gray, Silty CLAY, fine to coarse Sand, little fine Gravel. S-9 14 Saprolite Salty CLAY, fine to coarse Sand, little fine Gravel. S-8 Saprolite S	10'-				7.00								
S-7 24/19 14-16 5-9 ND Very stiff, gray-yellow orange, Sitty CLAY, mottled with laminated fine to medium Sand portings (saprolite). S-7 24/19 14-16 5-9 ND 13-6 portings (saprolite). S-8 24/18 19-21 9-7 ND little fine Gravel (moderately weathered rock and saprolite). S-8 24/18 19-21 9-7 ND little fine Gravel (moderately weathered rock and saprolite). Stiff, olive-gray, Silty CLAY, fine to coarse Sand, little fine Gravel. SAPROLITE AND BEDROCK Sand, little fine Gravel. SAPROLITE AND BEDROCK Sand, little fine Gravel. SAPROLITE AND BEDROCK 28' HIGHLY WATHERED BEDROCK WATHERED BEDROCK 28' HIGHLY WATHERED BEDROCK C28' HIGHLY WATHERED BEDROCK C28' Alluvium-saprolite transition between 3.5 and 10 feet below ground surface. Losing mud at this depth. Pound 6-inch casing to the fire casing. Water observed at 3 feet, while 6-inch casing at 4 feet. A 3. Alluvium-saprolite transition between 8.5 and 10 feet below ground surface. Losing mud at this depth. Pound 6-inch casing to the fire casing. SAPROLITE AND BEDROCK C28' HIGHLY WATHERED BEDROCK PORTION OF THE CORD BEDROCK Water observed at 3 feet, while 6-inch casing at 4 feet. A 3. Alluvium-saprolite transition between 8.5 and 10 feet below ground surface. Losing mud at this depth. Pound 6-inch casing to the casing at 4 feet. SAPROLITE AND BEDROCK DATE OF THE CORD BEDROCK WATHERED BEDROCK BEDROCK 28' HIGHLY WATHERED BEDROCK BEDROCK C28' HIGHLY WATHERED BEDROCK DATE OF THE CORD BEDROCK BEDROCK C28' HIGHLY WATHERED BEDROCK DATE OF THE CASING BEDROCK BEDROCK C28' HIGHLY WATHERED BEDROCK DATE OF THE CASING BEDROCK BEDROCK C28' HIGHLY WATHERED BEDROCK DATE OF THE CASING BEDROCK BEDROCK C28' HIGHLY WATHERED BEDROCK DATE OF THE CASING BEDROCK BEDROCK DATE OF THE CASING BEDROCK DATE OF THE CASING BEDROCK BEDROCK DATE OF			S-6	24/20	10-12		ND		10'				
S-7 24/19 14-16 5-9 ND Very stiff, gray-yellow orange, Sitty CLAY, mottled with laminated fine to medium Sand portings (saprolite). S-8 24/18 19-21 9-7 ND Stiff, gray, Sitty CLAY, fine to coarse Sand, little fine Gravel (moderately weathered rock and saprolite). S-9 24/16 24-26 14-10 ND Stiff, olive-gray, Sitty CLAY, fine to coarse Sand, little fine Gravel. S-9 14 Stiff, olive-gray, Sitty CLAY, fine to coarse Sand, little fine Gravel. S-9 24/17 29-31 17-19 ND Stiff, olive-gray, moderately weathered bedrock (andesite), little Sitty Clay, R E NO SEOB organic vapor meter equipped with a photoionization detector (PID) and 10.7 eV lamp. Results in parts per millic graymy. ND indicates nothing detected (<0.1 ppmy.) PID background reading = 0.0 ppm. Water observed at 3 feet, while 6-inch casing at 4 feet. Lusing 4-inch spin casing with drilling mud after 6-inch drive casing. S-7 24/19 14-16 5-9 ND Very stiff, gray-yellow orange, Sitty CLAY, mottled with laminated fine to medium Sand portings (saprolite). Stiff, olive-gray, Sitty CLAY, fine to coarse Sand, little fine Gravel. SAPROLITE AND BECROCK 28' Highly WEATHERED BEDROCK 28' July WEATHERED B			-			10-13					李	В	4 1/2" OREHOLE
S-7 24/19 14-16 5-9 ND Very stiff, gray-yellow orange, Sitty CLAY, mottled with laminated fine to medium Sand portings (saprolite). S-8 24/18 19-21 9-7 ND Stiff, gray, Sitty CLAY, fine to coarse Sand, little fine Gravel (moderately weathered rock and saprolite). S-9 24/16 24-26 14-10 ND Stiff, olive-gray, Sitty CLAY, fine to coarse Sand, little fine Gravel. S-9 14 Stiff, olive-gray, Sitty CLAY, fine to coarse Sand, little fine Gravel. S-9 24/17 29-31 17-19 ND Stiff, olive-gray, moderately weathered bedrock (andesite), little Sitty Clay, R E NO SEOB organic vapor meter equipped with a photoionization detector (PID) and 10.7 eV lamp. Results in parts per millic graymy. ND indicates nothing detected (<0.1 ppmy.) PID background reading = 0.0 ppm. Water observed at 3 feet, while 6-inch casing at 4 feet. Lusing 4-inch spin casing with drilling mud after 6-inch drive casing. S-7 24/19 14-16 5-9 ND Very stiff, gray-yellow orange, Sitty CLAY, mottled with laminated fine to medium Sand portings (saprolite). Stiff, olive-gray, Sitty CLAY, fine to coarse Sand, little fine Gravel. SAPROLITE AND BECROCK 28' Highly WEATHERED BEDROCK 28' July WEATHERED B				-									
mottled with laminated fine to medium Sand portings (saprolite). S-8 24/18 19-21 9-7 ND little fine Gravel (moderately weathered rock and saprolite). Stiff, gray, Silty CLAY, fine to coarse Sand, little fine Gravel (moderately weathered rock and saprolite). Stiff, olive-gray, Silty CLAY, fine to coarse Sand, little fine Gravel. SAPROLITE AND BEDROCK S-10 24/17 29-31 17-19 ND bedrock (andesite), little Silty Clay, Wery stiff, olive-gray, moderately weathered bedrock (andesite), little Silty Clay, Private of Sobord Clay (andesite), little Silty Clay, S-10 24/17 29-31 17-19 ND bedrock (andesite), little Silty Clay, Wery stiff, olive-gray, moderately weathered bedrock (andesite), little Silty Clay, Wery stiff, olive-gray, moderately weathered bedrock (andesite), little Silty Clay, Were observed at 3 feet, while 6-inch casing at 4 feet. Juliyulm-saprolite transition between 8.5 and 10 feet below ground surface. Losing mud at this depth. Pound 6-inch casing to Drill mud loss between 26 and 29 feet below grade (± 50 gallons).				2.1				Very stiff gray-vellow grange Silty CLAV	SAPROLITE			c	EMENT)
S-8 24/18 19-21 9-7 ND Stiff, gray, Silty CLAY, fine to coarse Sand, little fine Gravel (moderately weathered rock and saprolite). S-9 24/16 24-26 14-10 ND Stiff, olive-gray, Silty CLAY, fine to coarse Sand, little fine Gravel. SAPROLITE AND BEDROCK S-10 24/17 29-31 17-19 ND Very stiff, olive-gray, moderately weathered bedrock (andesite), little Silty Clay, R E C S-10 24/17 29-31 17-19 ND Very stiff, olive-gray, moderately weathered bedrock (andesite), little Silty Clay, SAPROLITE AND BEDROCK 28' Light testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 5808 organic vapor meter equipped with a photoinization detector (PID) and 10.7 eV lamp. Results in parts per millic (ppmy). ND indicates nothing detected (<0.1 ppmy). PID background reading = 0.0 ppm. Water observed at 3 feet, while 6-inch casing at 4 feet. J SI SURVIVINI-saprolite transition between 8.5 and 10 feet below ground surface. Losing mud at this depth. Pound 6-inch casing to the properties of th	15'-	-	S-7	24/19	14-16		ND	mottled with laminated fine to medium Sand					NTONITE GROUT -
25' S-9 24/16 24-26 14-10 ND Stiff, olive-gray, Silty CLAY, fine to coarse Sand, little fine Gravel. Sand, little fine Gravel. SAPROLITE AND BEDROCK 28' S-10 24/17 29-31 17-19 ND bedrock (andesite), little Silty Clay, Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 580B organic vapor meter equipped with a photoionization detector (PID) and 10.7 eV lamp. Results in parts per milliformy). ND indicates nothing detected (<0.1 ppmv). PID background reading = 0.0 ppm. Water observed at 3 feet, while 6-inch casing at 4 feet. Alluvium-saprolite transition between 8.5 and 10 feet below ground surface. Losing mud at this depth. Pound 6-inch casing to Using 4-inch spin casing with drilling mud after 6-inch drive casing. Drill mud loss between 26 and 29 feet below grade (± 50 gallons).						13-6		portings (saprolite).					
25' S-9 24/16 24-26 14-10 ND Stiff, olive-gray, Silty CLAY, fine to coarse Sand, little fine Gravel. Sand, little fine Gravel. SAPROLITE AND BEDROCK 28' S-10 24/17 29-31 17-19 ND bedrock (andesite), little Silty Clay, Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 580B organic vapor meter equipped with a photoionization detector (PID) and 10.7 eV lamp. Results in parts per milliformy). ND indicates nothing detected (<0.1 ppmv). PID background reading = 0.0 ppm. Water observed at 3 feet, while 6-inch casing at 4 feet. Alluvium-saprolite transition between 8.5 and 10 feet below ground surface. Losing mud at this depth. Pound 6-inch casing to Using 4-inch spin casing with drilling mud after 6-inch drive casing. Drill mud loss between 26 and 29 feet below grade (± 50 gallons).		-	-		-		-	·					
25' S-9 24/16 24-26 14-10 ND Stiff, olive-gray, Silty CLAY, fine to coarse Sand, little fine Gravel. Sand, little fine Gravel. SAPROLITE AND BEDROCK 28' S-10 24/17 29-31 17-19 ND bedrock (andesite), little Silty Clay, Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 580B organic vapor meter equipped with a photoionization detector (PID) and 10.7 eV lamp. Results in parts per milliformy). ND indicates nothing detected (<0.1 ppmv). PID background reading = 0.0 ppm. Water observed at 3 feet, while 6-inch casing at 4 feet. Alluvium-saprolite transition between 8.5 and 10 feet below ground surface. Losing mud at this depth. Pound 6-inch casing to Using 4-inch spin casing with drilling mud after 6-inch drive casing. Drill mud loss between 26 and 29 feet below grade (± 50 gallons).													
25' S-9 24/16 24-26 14-10 ND Stiff, olive-gray, Silty CLAY, fine to coarse Sand, little fine Gravel. Sand, little fine Gravel. SAPROLITE AND BEDROCK 28' S-10 24/17 29-31 17-19 ND bedrock (andesite), little Silty Clay, Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 580B organic vapor meter equipped with a photoionization detector (PID) and 10.7 eV lamp. Results in parts per milliformy). ND indicates nothing detected (<0.1 ppmv). PID background reading = 0.0 ppm. Water observed at 3 feet, while 6-inch casing at 4 feet. Alluvium-saprolite transition between 8.5 and 10 feet below ground surface. Losing mud at this depth. Pound 6-inch casing to Using 4-inch spin casing with drilling mud after 6-inch drive casing. Drill mud loss between 26 and 29 feet below grade (± 50 gallons).		-	5.0	24/10	10.21	0.7	ND	Stiff, gray, Silty CLAY, fine to coarse Sand.			8 -		2" ID
Stiff, olive-gray, Silty CLAY, fine to coarse Sand, little fine Gravel. SAPROLITE AND BEDROCK 28' HIGHLY WEATHERED BEDROCK R E In Sild testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of sex using a 580B organic vapor meter equipped with a photoionization detector (PID) and 10.7 eV lamp. Results in parts per milli (ppmv). ND indicates nothing detected (<0.1 ppmv). PID background reading = 0.0 ppm. Water observed at 3 feet, while 6-inch casing at 4 feet. Alluvium-saprolite transition between 8.5 and 10 feet below ground surface. Losing mud at this depth. Pound 6-inch casing to 10 feet below grade (± 50 gallons).	20'-		5-6	24/10	19-21		ND	little fine Gravel (moderately weathered rock					SCH. 40 PVC -
Stiff, olive-gray, Silty CLAY, fine to coarse Sand, little fine Gravel. SAPROLITE AND BEDROCK S-10 24/17 29-31 17-19 ND Very stiff, olive-gray, moderately weathered bedrock (andesite), little Silty Clay, NO Set observed at 3 feet, while 6-inch casing at 4 feet. A A Alluvium-saprolite transition between 8.5 and 10 feet below grade (± 50 gallons). Stiff, olive-gray, Silty CLAY, fine to coarse Sand, little fine Gravel. SAPROLITE AND BEDROCK PRE HIGHLY WEATHERED BEDROCK SAPROLITE AND BEDROCK PRE HIGHLY WEATHERED BEDROCK Weathered bedrock (andesite), little Silty Clay, Weathered bedrock (andesite), little Silty Clay, Weathered bedrock (andesite) and 10.7 eV lamp. Results in parts per million for the casing at 4 feet. A Alluvium-saprolite transition between 8.5 and 10 feet below ground surface. Losing mud at this depth. Pound 6-inch casing the Using 4-inch spin casing with drilling mud after 6-inch drive casing. Drill mud loss between 26 and 29 feet below grade (± 50 gallons).						7-9		and saprolite).				P	RISER (0.5-39')
Stiff, olive-gray, Silty CLAY, fine to coarse Sand, little fine Gravel. SAPROLITE AND BEDROCK S-10 24/17 29-31 17-19 ND Very stiff, olive-gray, moderately weathered bedrock (andesite), little Silty Clay, NO Set observed at 3 feet, while 6-inch casing at 4 feet. A A Alluvium-saprolite transition between 8.5 and 10 feet below grade (± 50 gallons). Stiff, olive-gray, Silty CLAY, fine to coarse Sand, little fine Gravel. SAPROLITE AND BEDROCK PRE HIGHLY WEATHERED BEDROCK SAPROLITE AND BEDROCK PRE HIGHLY WEATHERED BEDROCK Weathered bedrock (andesite), little Silty Clay, Weathered bedrock (andesite), little Silty Clay, Weathered bedrock (andesite) and 10.7 eV lamp. Results in parts per million for the casing at 4 feet. A Alluvium-saprolite transition between 8.5 and 10 feet below ground surface. Losing mud at this depth. Pound 6-inch casing the Using 4-inch spin casing with drilling mud after 6-inch drive casing. Drill mud loss between 26 and 29 feet below grade (± 50 gallons).												F	
Sand, little fine Gravel. SAPROLITE AND BEDROCK SAPROLITE AND BEDROCK S-10 24/17 29-31 17-19 ND Very stiff, olive-gray, moderately weathered bedrock (andesite), little Silty Clay, R I. Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 580B organic vapor meter equipped with a photoionization detector (PID) and 10.7 eV lamp. Results in parts per million (ppmv). ND indicates nothing detected (<0.1 ppmv). PID background reading = 0.0 ppm. Water observed at 3 feet, while 6-inch casing at 4 feet. A Alluvium-saprolite transition between 8.5 and 10 feet below ground surface. Losing mud at this depth. Pound 6-inch casing to Using 4-inch spin casing with drilling mud after 6-inch drive casing. Drill mud loss between 26 and 29 feet below grade (± 50 gallons).			-						23' — —				
Sand, little fine Gravel. SAPROLITE AND BEDROCK SAPROLITE AND BEDROCK S-10 24/17 29-31 17-19 ND Very stiff, olive-gray, moderately weathered bedrock (andesite), little Silty Clay, R I. Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 580B organic vapor meter equipped with a photoionization detector (PID) and 10.7 eV lamp. Results in parts per million (ppmv). ND indicates nothing detected (<0.1 ppmv). PID background reading = 0.0 ppm. Water observed at 3 feet, while 6-inch casing at 4 feet. A Alluvium-saprolite transition between 8.5 and 10 feet below ground surface. Losing mud at this depth. Pound 6-inch casing to Using 4-inch spin casing with drilling mud after 6-inch drive casing. Drill mud loss between 26 and 29 feet below grade (± 50 gallons).			5.9	24/16	24-26	14-10	ND	Stiff, olive-gray, Silty CLAY, fine to coarse				T.	
R E In Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 5808 organic vapor meter equipped with a photoionization detector (PID) and 10.7 eV lamp. Results in parts per milling (ppmv). ND indicates nothing detected (<0.1 ppmv). PID background reading = 0.0 ppm. Water observed at 3 feet, while 6-inch casing at 4 feet. A 3. Alluvium-saprolite transition between 8.5 and 10 feet below ground surface. Losing mud at this depth. Pound 6-inch casing to Using 4-inch spin casing with drilling mud after 6-inch drive casing. B 5. Drill mud loss between 26 and 29 feet below grade (± 50 gallons).	25'-			- // 10	2,20		.,,,,		SAPROLITE				-
S-10 24/17 29-31 17-19 ND Very stiff, olive-gray, moderately weathered bedrock (andesite), little Silty Clay, R E I. Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 580B organic vapor meter equipped with a photoionization detector (PID) and 10.7 eV lamp. Results in parts per million (ppmv). ND indicates nothing detected (<0.1 ppmv). PID background reading = 0.0 ppm. Vater observed at 3 feet, while 6-inch casing at 4 feet. A Alluvium-saprolite transition between 8.5 and 10 feet below ground surface. Losing mud at this depth. Pound 6-inch casing to Using 4-inch spin casing with drilling mud after 6-inch drive casing. Drill mud loss between 26 and 29 feet below grade (± 50 gallons).										5			
S-10 24/17 29-31 17-19 ND Very stiff, olive-gray, moderately weathered bedrock (andesite), little Silty Clay, R E I. Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 580B organic vapor meter equipped with a photoionization detector (PID) and 10.7 eV lamp. Results in parts per million (ppmv). ND indicates nothing detected (<0.1 ppmv). PID background reading = 0.0 ppm. Vater observed at 3 feet, while 6-inch casing at 4 feet. A Alluvium-saprolite transition between 8.5 and 10 feet below ground surface. Losing mud at this depth. Pound 6-inch casing to Using 4-inch spin casing with drilling mud after 6-inch drive casing. Drill mud loss between 26 and 29 feet below grade (± 50 gallons).									201				1
S-10 24/17 29-31 17-19 ND bedrock (andesite), little Silty Clay, Solid testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 5808 organic vapor meter equipped with a photoinization detector (PID) and 10.7 eV lamp. Results in parts per milling (ppmv). ND indicates nothing detected (<0.1 ppmv). PID background reading = 0.0 ppm. Water observed at 3 feet, while 6-inch casing at 4 feet. A 3. Alluvium-saprolite transition between 8.5 and 10 feet below ground surface. Losing mud at this depth. Pound 6-inch casing to Using 4-inch spin casing with drilling mud after 6-inch drive casing. Solid testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 5808 organic vapor meter equipped with a photoionization detector (PID) and 10.7 eV lamp. Results in parts per milling parts per milling parts. A Solid testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 5808 organic vapor meter equipped with a photoionization detector (PID) and 10.7 eV lamp. Results in parts per milling parts per milling parts per milling parts per milling parts. A Solid testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 5808 organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 5808 organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 5808 organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 5808 organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 5808 organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 5808 organic vapor levels, referenced to a set using a 5808 organic vapor levels, referenced to a set using a 5808 organic va									HIGHLY				
R 1. Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of set using a 5808 organic vapor meter equipped with a photoionization detector (PID) and 10.7 eV lamp. Results in parts per milli (ppmv). ND indicates nothing detected (<0.1 ppmv). PID background reading = 0.0 ppm. Water observed at 3 feet, while 6-inch casing at 4 feet. A 3. Alluvium-saprolite transition between 8.5 and 10 feet below ground surface. Losing mud at this depth. Pound 6-inch casing to Using 4-inch spin casing with drilling mud after 6-inch drive casing. B 5. Drill mud loss between 26 and 29 feet below grade (± 50 gallons).	'n		S-10	24/17	29-31	17-19	ND						
Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times	E M A R K S	2. V 3. A 4. U 5. E	rield test using a 5 ppmv). I Water ob Alluvium- Using 4-i Orill mud	ting result 580B orga ND indicat served at saprolite nch spin loss bety	s represen nic vapor i tes nothing 3 feet, wi transition i casing with veen 26 ar	t total org meter equi g detected hile 6-inch between 8 h drilling m and 29 feet	anic vap pped wi (<0.1 p casing a .5 and 1 and after below g	or levels, referenced to a benzene standard, measure th a photoionization detector (PID) and 10.7 eV lamp opmv). PID background reading = 0.0 ppm. at 4 feet. 10 feet below ground surface. Losing mud at this delection of the detection of the de	. Results in poth. Pound 6	parts	per milli	ion by vol	ume

Fore Logg Date Borin	man ged b	or:	(nental, I cientists	_	San German, Puerto Rico			No.:		76.55
	ng Lo	y: rt/Fini catio	M. P. sh: 1-1 n: See E	_ Datur	a Adilman 25-02 Location m: NGV		Auger/ Casing Sampler Type: Casing SS O.D. / I.D.: 6"/4" 2"/2-1/2" ammer Wt.: 300# 140# lammer Fall: 30" 30"	ROUNDW Time	ATE	eck: _ ER REA		
Depth	Casing	No.	Pen/ Rec. (ln.)	Depth (Ft.)	Blows (/6")	Field Test Data (ppm)	Sample Description & Classification	Stratum Desc.	Rmks.	Equi	ipment l	nstalle
					20-15	ND	Andesite, little olive-brown, Silty Clay (moderately weathered, rk w saprolite).	HIGHLY WEATHERED BEDROCK	6			CEMENT/ ENTONITE GROUT
		CORE			MIN/FT	RQD			8	404		
_		C-1	36/18	34-35	7	0	C-1: Hard, slightly weathered to fresh, bluish	34'			34"	
5'				35-36	7		gray, fine to medium grained Andesite porphyry, highly fractured non-oxide stained				- BE	NTONITE
				36-37	7		joints/fractures.					SEAL
		C-2	24/15	37-38	8	0	C-2: Similar to C-1; trace pyrite/chalcopyrite.		9		37'	1790
P)				38-39	8						8	3 1/2" OREHOL
		C-3	60/11	39-40	9	0	C-3: Similar to C-1.	1		8	39'	
0,				40-41	7							
-				41-42	8						1	
1	1			42-43	9			HIGHLY FRACTURED				
1				43-44	9			ANDESITE PORPHYRY				SAND
1		C-4	60/11	44-45	11	0	C-4: Similar to C-1, except several strongly				1	37-54')
5		-		45-46	10		iron-oxide stained joints/fractures.	1				
+	-	-		46-47	9							
-		1		47-48	10							
H				48-49	10							2" ID
+	-	C-5	60/8	49-54	10	0	C-5: Similar to C-1.					PVC
0'	-	C-5	00/0	45-54	9					10	10	SCREEN 0.01" SL
1	+			-	9							(39-54)
-	-				9							
1	-				10					Sum S		
-	-				10		Bottom of boring at 54 feet.	54'			54'	
5'	-						bottom or beining at our root.					
-		-				1		1				
1												
				-								
6.	. Di	fficult	roller bit	l advance	betweer	1 31 ani	d 34 feet; spun casing to 34 feet.	1	-			
7. 8. 9.	Re Us	eplaced sed 2	d drilling 1/2-inch	mud with	h clean w rel (HO si	ater. ze).	een 37 and 39 feet; spun casing to 39 feet.					
	ation II	nes renre	sent annro	ximate hour	daries between	en soil tu	pes, transitions may be gradual. Water level readings have been	made at times	. T		No.: G	

	4		GZA GeoE Engine	Invironn eers and S	nental, I	nc. —	Former Compa San Germa				Pag File	ge:	o.:GZ _1 of 2087	6.55
For Log Da Bo	remar gged te Sta ring L	tor: n: by: art/Fini ocatio	ish: <u>2-</u> n: See I	Geocim, I F. River M. Pont 6-02 / 2- Exploration Datur	nc. a ti 6-02 Location n: NGV	Plan H	Auger/ Casing Type: Flush Joint O.D. / I.D.: 4"/4-1/2" sammer Wt.: lammer Fall: Other:	\equiv	Date	ROUNDW Time	ATE	eck: _ R REA		
Depth	Casing Blows	No.	Pen/ Rec. (In.)	Depth (Ft.)	Blows (/6")	Field Test Data (ppm)	San Description &		ion	Stratum Desc.	Rmks.	Equ	ipment I	
0'-							Refer to log GZ-510R tions.	for stratum o	descrip-		1 2		3*	BENTONIT SEAL
25'-						asing to	A feet and A-inch rain and	og and delling	umud to 16	feet			Į,	PILTER SAND 2" ID 2" ID 9 PVC SCREEN 0.01" SLOT
REMARKS	2.	Clean w	ater used	from 1/5 f	eet to tota	l depth.	4 feet and 4-inch spin casi				os 1		g No.: G	a70.77

	7		GZA GeoF	Environn eers and S	nental, I	nc. —	Former Compaq F San German,	No. 10 to 10			Pag	ring No.: GZ-510L ge: 2 of 2 e No.: 20876.55
Co For Lo Da Bo	ntracteman gged te Sta ring L	tor: i: by: art/Fini ocatio	sh: <u>2-</u> n: <u>See l</u>	Geocim, I F. River M. Pont 6-02 / 2- Exploration Datur	nc. a ti 6-02 Location	Plan Ha	Auger/ Casing Type: Flush Joint O.D. / I.D.: 4"/4-1/2" mmmer Wt.: ammer Fall:		GI Date	ROUNDW Time	Ch	eck: DJA ER READINGS epth Casing Stab
-	LIEV			ple Infor			Other:					
Depth	Casing Blows	No.	Pen/ Rec. (in.)	Depth (Ft.)		Field Test Data (ppm)	Sample Description & Cla		n	Stratum Desc.	Rmks.	Equipment Installed
5 <u>-</u>												FILTER SAND (17-39') 2" ID SCH. 40 PVC SCREEN (0.01" SLOT (19-39')
۰.0							Bottom of boring a	t 39.5 fee	et.	39.5'		39.5'
5-												
01												
5-												
REMARKS												

(//	71	GZA GeoF	Environn eers and S	nental, I	ne.	Former Compaq Facility Phase IV	S	Pag	ring No. ge: 1	of_	
0						_	San German, Puerto Rico	-		No.: _	7.00	
Co	ntrac	tor: _	13	Geocim, I	nc.		Auger/ Sampler			eck:		
For	remar):		F. River	а		Casing	ROUNDW				Stab
Lo	gged	DA:		Mr. FOIR			Type: Flush John 55	Time	DE	epth	Casing	Stab
Da	te Sta	art/Fin	ish: 1-2	28-02 / 2-	6-02		O.D. / I.D.: 4"/4-1/2" 2"/2-1/2"			-	-	
Bo	ring L	ocatio	n: See	Exploration	Location	Plan H	ammer Wt.: <u>NA</u> <u>140#</u>	-			-	
GS	Elev	.:	NA	_ Datur	n: NGV	<u>D</u> H	lammer Fall: NA 30"		-			-
	1		Sam	ple Inform	nation		Other:					
_	gr s/		T			Field		25.72.070.4		Facilia		
Depth	Casing Blows	No.	Pen/ Rec. (In.)	Depth (Ft.)	Blows (/6")	Test Data (ppm)	Sample Description & Classification	Stratum Desc.	Rmks.		ment In:	
	To y	S-1	24/15	0-2	26-9	0.3	Medium dense, grayish brown, fine to	ASPHALT 2"	1			6 1/2"
1					3-3		coarse SAND, some Silt, Fill.	FILL	2		200	CURBBOX
		S-2	24/17	2-4	6-8	0.1	Stiff, yellow-brown, SILT and CLAY, little	2'			The same of the sa	EMENT
					8-13		fine to coarse Sand.				3	
		S-3	24/20	4-6	5-9	0.1	Very stiff, yellow-brown gray, SILT and					
5'-		-	- //		14-15		CLAY, trace fine Sand.	6				-
		S-4	24/21	6-8	11-17	ND	Very stiff, yellow-brown gray, SILT and					
		-	2.02		19-21	1	CLAY, trace brecciated gray Rock, fine Sand.					4 1/2" DREHOLE
			-		13.21							JALITOLL
	-	-		-			-	1			技	
10'-			-	-	-	-	4					
					-		-					
		-										MENT/
					-	-		THOR- OUGHLY	3			TONITE ROUT
			4.1%		10.10		Hard, olive brown, Silty CLAY, some Gravel	WEATHERED BEDROCK				
15'-		S-5	24/2	14-16	43-18	ND	pieces (saprolite).	(SAPROLITE)	4			
		1		-	17-20							
							4					
		-										
							Hard, olive brown, Silty CLAY, little fine to					2" ID
20'-		S-6	12/6	19-20	102-	ND	coarse Sand and Gravel pieces (saprolite).			1/4		PVC ·
		_			112	-					(0	RISER).5-63.5')
					-							
		_								1		
							Hard, olive brown-orange, Silty CLAY, little					
25'-		S-7	24/22	24-26	16-31	ND	fine to coarse Sand and fine Gravel pieces			Ē		
					57-55		(saprolite).					
						-						
	_						Hard, olive brown-orange, Silty CLAY, little			No.		
		S-8	12/12	29-30	55-125	ND	fine to coarse Sand and fine Gravel pieces.					

Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of sealed soil sample jars using a 580B organic vapor meter equipped with a photoionization detector (PID) and 10.7 eV lamp. Results in parts per million by volume (ppmv). ND indicates nothing detected (<0.1 ppmv). PID background reading = 0.0 ppm.

Drill mud mixed to 12 pound per gallons; drill mud used during drill and wash method of borehole advance between 4 and 55 feet below existing grade (beg).

Vigorous rapping of drill rod; increase down pressure required to drill between 13 and 14 feet.

Piece of gravel wedged in bottom of split spoon at sample S-5. E

M

3.

4.

R

K S

	Z	GZA GeoE	nvironm eers and So	iental, li	nc. —	Former Compaq Facility Phase IV San German, Puerto Rico	-	Pag		.: <u>GZ-</u> 2 of _ 2087	3
Contract Forema Logged Date St Boring I	ctor: n: by: tart/Fini Location	sh: <u>1-2</u> n: See I	Geocim, II F. Rivera	i 6-02 Location	Plan H	Auger/ Sampler	ROUNDW Time	Ch	eck: _	DJ.	
GS Elev			ole Inform			Other:		-	-		
Casing Blows	No.	Pen/ Rec. (In.)	Depth (Ft.)	Blows (/6")	Field Test Data (ppm)	Sample Description & Classification	Stratum Desc.	Rmks.	Equip	oment In	stalle
							HIGHLY WEATHERED BEDROCK	6		BE.	EMENT/ NTONITI
5-	S-9	12/7	34-35	58-106	ND	Hard, olive brown, Silty CLAY and moder- ately weathered Andesite bedrock (fine to medium gravel pieces).	33,	7			
0-	S-10	12/8	39-40	55-73	ND	Hard, olive-orange brown, Silty CLAY, little fine to coarse Sand, fine Gravel pieces Andesite.				В	4 1/2" OREHOL
5-	S-11	12/9	44-45	48-86	ND	Hard, olive-orange brown, Silty CLAY, fine to coarse Sand, Gravel pieces Andesite.	MODERATELY WEATHERED BEDROCK AND SAPROLITE	and the second s			
0'	S-12	12/10	49-50	89-100	ND	Hard, olive-orange brown-gray, Silty CLAY, some fine Sand, fine Gravel pieces Andesite.					2" ID SCH. 40 PVC RISER 0.5-63.5
5-	S-13	18/10	54-55.5	52-72 104	ND	Hard, olive-orange brown-gray, Silty CLAY, fine to coarse Sand, fine Gravel pieces.					
	CORE BARREL C-1	60/30	59-64	MIN/FT	RQD 28	Hard, to very hard, fresh to slightly weath- ered, fine grained, gray, ANDESITE, highly	57' HIGHLY FRACTURED ANDESITE BEDROCK	5	No. C. Kenny	59.5	BENTON SEAL

(4			nvironn eers and S		nc. —	Former Compaq Facility Phase I San German, Puerto Rico	V	Pag File	ring No.: GZ-510R ge: 3 of 3 PNo.: 20876.5
For Log Da Bo	remar gged te Sta ring L	n: by: art/Fin ocatio	ish: <u>1-2</u> n: See I	F. River M. Pont 28-02 / 2- exploration Datur	i -6-02 Location		Auger/ Casing Type: Flush Joint SS O.D. / I.D.: 4"/4-1/2" 2"/2-1/2" ammer Wt.: NA 140# ammer Fall: NA 30" Other:	GROUNDW Time	ATE	eck: DJA ER READINGS epth Casing Sta
Depth	Casing Blows	No.	Samp Pen/ Rec.	Depth (Ft.)	Blows	Field Test Data	Sample Description & Classification	Stratum Desc.	Rmks.	Equipment Installe
0-		C-2 C-3	60/36 60/60	64-69	9 9 8 9 10 10 9 10 11 10 11 10 9 8	RQD = 27 RQD = 58 RQD = 18	fractured, shallow to steeply dipping, rough to smooth, very closely spaced, slightly weathered to filled joints/fractures. Similar to S-1, except bottom 14" exhibits pitted texture with fine Calcite filled lugs. Hard to very hard, fresh, fine grained, gray, ANDESITE, moderately to highly fractured, very close to closely spaced, rough to smooth, shallow to steeply dipping, slightly weathered to filled (calcite) joints/fractures. Similar to C-3, except highly fractured with trace, dissemenated pyrite/chalcopyrite.	HIGHLY FRACTURED ANDESITE BEDROCK		BENTONIT SEAL 61,5' 2* ID SCH. 40 PVC RISER 3 1/2* BOREHOLE FILTER SAND
10'-					9 8		Bottom of boring at 79 feet.	79'		SCREEN (0.01" SLO (64-79') 79'
35										
							pes, transitions may be gradual. Water level readings have be due to other factors than those present at the time measure			Boring No.: GZ-510R

oment Installed
CONCRETE 6° CURBBOX 6 1/2" BOREHOLE BENTONITE SEAL (3-8") 4 1/2" BOREHOLE 8" 2" ID SCH. 40 PVC RISER (0.5-10") 3 1/2" BOREHOLE
2" ID SCH. 40 PVC SCREEN (0.01" SLOTI (10-25')
25'

-		1	GZA				Former Compag Facility Phase IV			ing No		512R
6	- /	51	Geol	Environn eers and S	iental, I	nc.	San German, Puerto Rico			ge:1 No.:		3
Fo	remar	CANA TO THE REAL PROPERTY.		Geocim, II F. River	nc. a	_	5	ROUNDW Time	Chi ATE	eck: _	DJ	A Stab
	gged		-	dilman, N		_	Type: Flush Joint SS Date 0.D. / I.D.: 6"/6.5- 2"/2-1/2" 1-16-02	0730		5.8	out	12 hrs
Bo	ring I	art/Fir	nish: 1-	9-02 / 1-1 Exploration	Location	Plan H	ammer Wt.: 4"/4.5 140#					
GS	Elev	.:	NA	Datur	n: NGV	D H	lammer Fall: 30"		_			
			Sam	ple Inforr	nation		Other: Ho Core Barrel					
Depth	Casing Blows	No.	Pen/ Rec. (In.)	Depth (Ft.)	Blows (/6")	Field Test Data (ppm)	Sample Description & Classification	Stratum Desc.	Rmks.		ment In	
		S-1	18/14	0.5-2.0	8	ND	S-1: Top 3": Asphalt, 3" cement with wire.	FILL				
					9-10		Medium dense, orange-brown black, fine to medium SAND, little Silt, trace coarse Sand	1.5'	1		00.4	6" CURBBO
		S-2	24/17	2-4	12-12	ND	(till).	ALLUVIUM				- 6 1/2" BOREHOLE
. 1					13-10		S-2: Very stiff, yellow-brown, CLAY & SILT, trace fine Sand.		2			CEMENT
5'-		5-3	24/18	4-6	7-7	ND	Top 10": Stiff, yellow-brown gray, CLAY	4'				
3 -					9-11		and SILT. Bottom 8": Yellow-brown gray, Silty CLAY, little fine to medium Sand.					
												4 1/2* DREHOLE
10'-		S-4	24/7	9-11	6-9	ND	Stiff, yellow-brown gray, Silty CLAY, little fine to medium Sand. Bottom 2": Hard, dark		3			MENGEE
					7-6		gray-black green, Breccia Rock. Dry.		4	0		
								THOR- OUGHLY	5			ROUT
768		S-5	24/24	14-16	4-7	ND	Stiff, yellow-brown gray-white, Clayey SILT,	WEATHERED ROCK	J	-2		
15'-					9-16		trace fine Sand, some laminations. Dry.	(SAPROLITE)		4		
20'-		S-6	24/18	19-21	10-14	ND	Top 10": Stiff, yellow-brown gray-white, Clayey SILT, trace fine Sand. Bottom 8":			-		2" ID SCH. 40
20-					14-41		Very stiff, gray-white, thoroughly weathered	20*				PVC RISER
							Rock (friable silt-like) with jointing, iron staining on some joints.					
051		S-7	14/14	24-25.2	22-68	ND	Very stiff, gray-white, thoroughly weathered	FRIABLE HIGHLY FRACTURED WEATHERED				
25'-					50/2"		Rock (friable silt-like) with jointing (some fe staining). 1" zone of yellow-brown color.	ROCK				

Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of sealed soil sample jars using a 580B organic vapor meter equipped with a photoionization detector (PID) and 10.7 eV lamp. Results in parts per million by volume (ppmv). ND indicates nothing detected (<0.1 ppmv). PID background reading = 0.5 ppm.

Four feet mixed mud, super gel to 50 seconds, then barite to 12 pounds/gallon, approximately 1 3/4 bags of barite = 45 gallons.

Leave 6-inch casing at 4 feet. Installed 4-inch casing to 9 feet. Clean with roller bit and mud, sample from 9 to 11 feet.

At 11 feet, mud thinned from 12 pounds/gallon to 9 pounds/gallon. Possible water at 11 to 12 feet. E

M

3. A

4.

29-29.6 70-50/1" ND

R Mud at 12 pounds/gallon; ND with OVM. K

7/7

S-8

S

Dry.

(7			Environn eers and Se Geocim, li		nc. —	Former Compaq Facility Phase IV San German, Puerto Rico Auger/		Pag File		GZ- of_ 20876	3 5.55
		tor:	~ ~	F. River		_	. Sampler	ROUNDW			INGS	
	gged			dilman, N			Type: Flush Joint SS Date	Time	De	pth	Casing	Stab
Da	te Sta	rt/Fin	sh: _1-	9-02 / 1-1	5-02		O.D. / I.D.: 6"/6.5- 2"/2-1/2" 1-16-02	0730	15	5.8	out	12 hr
Во	ring L	ocatio	n: See	Exploration	Location	Plan H	ammer Wt.: 4*/4.5 140#					
GS	Elev.	.:	NA	Datur	n:_NGV	<u>D</u> H	lammer Fall:30"					
	1		Sam	ple Inforr	nation		Other: no core parer					
Depth	Casing Blows	No.	Pen/ Rec. (In.)	Depth (Ft.)	Blows (/6")	Field Test Data (ppm)	Sample Description & Classification	Stratum Desc.	Rmks.	Equip	ment in	stalled
												GROUT
35 <u>-</u>		S-9	5/5	34-34.5	100/5"	ND	Very dense, dark gray-rust, fine to medium SAND (very weathered friable rock) some jointing.		6			2" ID
							John King.	FRIABLE WEATHERED ROCK		张宝玉		SCH. 40 PVC RISER (0.5-49')
							Very dense, gray-green rust-black, SILT and		7			REHOLE
10-		S-10	9/9	39-39.8	43-	ND	fine to medium Sand (weathered friable		8.		40"	
					100/5"		rock), clear remnant rock jointing, rust on joint planes. Moist.		9			
												TONITE SEAL
45 <u>-</u>		S-11	17/15	44-45.4	32-57	ND	Top 5": Completely fractured black rock (Andesite), coarse Gravel-size pieces.		10		2.5	
+0-					105/5"		Next 10": Olive-gray rust, SILT, fine Sand				45'	
							and rock fragments with iron staining. Dry.			No.		
										17.		RSAND
		CORE			MIN/FT						(4:	5-64')
		BARREL	00/05	10.51.5		-	RQD = 8/35 = 23%.	100	11		49"	
504		C-1	66/35	49-54.5			Hard, fresh to slightly weathered, dark gray	49*	12			
					16.0		to black, fine grained Andesite, highly fractured with steep to horizontal filled					1/2"
					14.5		joints, trace pyrite.					REHOLE
					13.5							
					10.0			HIGHLY				
554		C-2	60/30	54.5-60	12.0		RQD = 0 Hard, fresh to slightly weathered, dark gray-	ANDESITE				2" ID SCH. 40
. O-					9.0		black, fine grained Andesite, highly frac-	ROCK				PVC
					9.0		tured, trace pyrite.			1	(0.0	01" SLOT; 49-64')
				1	10.0							
					11.0							

M 9. Coarse sand size black fragments in wash water (some rusty silt/sand).

10. More silty, rusty remnant rock, continue with casing and spoons.
11. Casing at 49 feet, hard and not penetrating, spinning at 49 feet; lots of cuttings; losing water (50 gallons), try core barrel.
12. Core barrel is HO (2.5" ID) size. R

(4			Environm eers and So		ne. —	Former Compaq Facility San German, Puerto Auger/	-			Pag File	ge:	o.:GZ- 3of_ 20876	3 3.55
		tor:		Geocim, Ir F. Rivera	nc.	_	Casing Sampler		G	ROUNDW				•
		by:		dilman, M			Type: Flush Joint SS		te	Time	De	epth	Casing	Stab
Da	te Sta	art/Fin	ish: 1-9	9-02 / 1-1	5-02		O.D. / I.D.: 6"/6.5- 2"/2-1/2"	1-16	-02	0730	1	5.8	out	12 hr
				Exploration		100	ammer Wt.: <u>4"/4.5</u> <u>140#</u> lammer Fall: 30"	-	-			-		
GS	Elev	: —	NA	Datun	n:_NGV	<u> </u>	dammer Fall: 30"							
	_ 1		Sam	ple Inforn	nation		Other, is seen and							
Depth	Casing Blows	No.	Pen/ Rec. (In.)	Depth (Ft.)	Blows (/6")	Field Test Data (ppm)	Sample Description & Classificat	tion		Stratum Desc.	Rmks.	Equi	pment In	ER
		C-3	60/32	60-65.5	11.0	199.07	RQD = 13/32 = 41%				12	-		
		0.0	00/02	00.00.0	11.0		Hard, fresh to slightly weathered,				'-			1/2" REHOLE
		-			-		fine grained Andesite, highly fracti moderately to vertical dripping, ver		th					2" ID
	-				11.0	-	calc-silicate filled to slightly weath						1	PVC
	-	_	-		12.0		joints.							SCREEN 01" SLOT
35-					10.0							10 mg		49-64")
							Bottom of boring at 65 fee	et.		65*			COLLAPSE	D
													ROCK FRAGMEN	
				13			1							
70-														
							1							
				-	-		-							
										£.				
75														
							1							
							1							
80-														
											1			
		-	-		-		-				1			
				-			-							
		-												
85-														
R E M A R K S	13. C	-3 core	, barrel ju	mping whil	e coring.	I Difficult	I pulling out. To avoid losing borehole, st	opped c	oring	, used roller	bit t	o clean,	install wel	

	57		GZA GeoE Engin	Environn eers and S	nental, I cientists	nc. –		oq Facility Off-Site W			Pag File	ge: e No.:	2087	1 6.55
For Log Da Bo	contractor: Geocim, Inc. foreman: J. Calderon cogged by: J. Feliciano Date Start/Finish: 1-30-02 / 1-30-02 Coring Location: See Exploration Location Plan GS Elev.: NA Datum: NGVD Sample Information						Auger/ Casing Sampler Type: Casing N/A Date O.D. / I.D.: 6"/4" 01-22-02 Hammer Wt.: 300# Hammer Fall: 30" 0ther:			Time	Check: _ /ATER REA Depth 20.97			Stab
Ceptil	Casing Blows	No.	Pen/ Rec. (In.)	Depth (Ft.)	Blows (/6")	Field Test Data (ppm)	Sa Description 8	mple Classificat	ion	Stratum Desc.	Rmks.	Equip	oment ir	
.'_							No sampling perform GZ-513R for stratum				3		BEN 113'	CURBBOX 6 1/2" BOREHO CEMEN CEMENT/ NTONITE SROUT 4 1/2" OREHOLE TONITE SEAL 2" ID SCH. 40 PVC RISER (0.5-15') SILTER SAND 3-25.5') 3 1/2" OREHOLE
5'-													(0.	2" ID SCH. 40 PVC SCREEN 01" SLOT (15-25")
							Bottom of bo	ing at 25.5 f	eet.	25.5'				
1	2. L	sed 6-i	nch driv	e casing	to 4 feet,	and 4	descriptions at GZ-513l -inch spin casing with d from 11 feet to total de	rilling mud to	11 feet.					

Boring No.: GZ-513R Former Compag Facility Phase IV Page: 1 of_ GeoEnvironmental, Inc. PREPA Off-Site Wells File No.: 20876.55 Engineers and Scientists DJA Auger/ Check: Geocim, Inc. Sampler Casing J. Calderon **GROUNDWATER READINGS** Foreman: __ Stab Date Time Depth Casing J. Feliciano Type: Casing Logged by: _ 02-02-02 0910 16.51 2"/2-1/2" Date Start/Finish: 1-23-02 / 1-30-02 O.D. / I.D.: 4"/4-1/2" Hammer Wt.: __300# 140# Boring Location: See Exploration Location Plan Hammer Fall: 30" 30" GS Elev .: _ NA __ Datum: NGVD Other: Sample Information Field Depth Pen/ Equipment Installed Stratum Rmks. Depth Blows Sample Test No. Rec. Desc. (/6") Data Description & Classification (Ft.) 12" CURBBOX (In.) (ppm) ASPHALT S-1: Top 4": Hard, compact, black, asphalt. S-1 24/22 0-2 65-32 1 4" FILL Bottom 12": Dense, compact, yellowish CEMENT 18-19 2 brown to olive-gray, gravelly SAND. Dry. 1.5 Bottom 4": Soft to medium, yellowish brown S-2 24/24 2-4 15-16 1.3 CURBBOX to olive-gray, CLAY, trace Sand. 6 1/2" 14-8 S-2: Dense, compact, olive/yellowish brown, BOREHOLE 3 TO 4" GRAVEL, (subangular clasts), some Clay, ALLUVIUM S-3 24/24 4-6 2-2 1.0 trace to little Sand. Dry. Bottom 2": Soft 5 4-5 CLAY, Moist. S-3: Soft to medium, very dark gray, CLAY, S-4 24/24 6-8 2-4 1.3 trace Silt and Sand, moderately organic. SAND & 4 1/2 5-7 Slightly moist. BOREHOLE GRAVEL S-4: Iop 8": Same as above. Bottom 16": S-5 24/24 8-10 2-4 0.3 Medium to stiff, olive to yellowish brown to dark gray, CLAY, little coarse Sand and fine 4-6 ALLUVIUM 10 Gravel, Slightly moist. S-6 24/14 10-12 3-6 0.1 S-5: Stiff, yellowish brown to light olive, 4 CLAY, trace Silt and fine to medium Sand. 7-9 5 Slightly moist. 11.8 CEMENT/ 24/24 5-7 12-14 5-11 S-6: Same as above. Traces of hard rock BENTONITE GROUT fragments. Slightly moist. Bottom 2": Very 21-39 stiff, yellowish brown-olive, CLAY, trace rock fragments. 15 S-7: Very stiff, yellowish brown-olive, CLAY, SAPROLITE some thoroughly weathered, gravel-sized volcanic rock fragments, little Silt. Slightly moist. 2" ID Top 4": Soft to medium, brownish yellow-6 19 19-21 19-18 0.3 5-8 24/18 SCH 40 20 gray, CLAY. Bottom 14": Hard, severely PVC 24-21 fractured, highly weathered volcanic rock RISER (0.5-33.5") fragments, trace Clay.

R E Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of sealed soil sample jars using a 580B organic vapor meter equipped with a photoionization detector (PID) and 10.7 eV lamp. Results in parts per million by volume (ppmv). ND indicates nothing detected (<0.1 ppmv).

Loose, hard, dark gray to olive, andesite

M 2. Started sampling at 0905. PID background reading at 0.0 ppm.

A 3. Started preparing drill mud at 0945, Finished at 1050.

24-26

29-29.5

29-34

50/2"

50/5"

RQD =

0.1

0.0

S-9

S-10

C-1

CORE

25

2/0

5/4

60/0

R 4. Collected sample of drill mud and screened for VOCs with PID. Reading was 0.3 ppm.

5. At 1530, spoke with Eng. Ortiz-Feliciano of PREPA and coordinated parking space for drilling at 510R next day.

No recovery.

No recovery .

K 6. Started loosing drill mud at 20 feet. Stopped drilling to prepare additional mud.

\$ 7. Very hard at 28 feet for spin casing to advance. Flushed mud out of borehole and tub, replaced with clean water to start coring.

fragments, little Clay.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made

Boring No.: GZ-513R

BENTONITE

FRIABLE

HIGHLY

VEATHERED ROCK

7

For Log Dat Bor	GZA GeoEnvironmental, Inc. Engineers and Scientists Geocim, Inc. Foreman: J. Calderon Logged by: J. Feliciano Date Start/Finish: 1-23-02 / 1-30-02 Boring Location: See Exploration Location Plan GS Elev.: NA Datum: NGVD					Plan H	Type: Casing SS Date O.D. / I.D.: 4"/4-1/2" 2"/2-1/2" ammer Wt.: 300# 140# dammer Fall: 30" 30"	Time	Cho ATE	R READINGS epth Casing Stab 5.51 out
	1		Sam	ple Infor	mation		Other:			
Depth	Casing Blows	No.	Pen/ Rec. (In.)	Depth (Ft.)	Blows (/6")	Field Test Data (ppm)	Sample Description & Classification	Stratum Desc.	Rmks.	Equipment Installed
-										BENTONITE SEAL
1										3 1/2* ——BOREHOLE
1		CORE								33.5
		BARREL C-2	24/12	34-36	RQD=		Highly weathered to fresh, severely	HIGHLY		
35'					0.0		fractured, bluish gray/olive, Andesite, hydrothermally altered surfaces.	FRACTURED		
		C-3	12/8	36-37	RQD=		Same as Run 2.		8	
					0.0				9	2" ID SCH. 40
	1	C-4	60/30	37-42	RQD=		Same as Run 2, highly weathered to fresh, highly fractured, oxidized fissures.			PVC SCREEN (0.01" SLO
10'					1.0		migrify fractured, Oxidized fissures.			(33.5-49.5
						THE S		ANDESITE		
		C-5	60/0	42-47	RQD =	1-7	No recovery.	ROCK		
					0.0					
										FILTER PACK (31-49.5')
15:										
-		Section 1					Hard, slightly weathered to fresh, highly to		10	
+		C-6	60/24	47-52	RQD=		severely fractured, bluish gray to light olive,		, ,	
+	-				0.0		Andesite, hydrothermally altered, oxidized joint surfaces.			
1	-					-		1		
07	-									49.5
1		C-7	24/12	52-54	RQD=	-	Same as Run 6.			COLLAPSED BOREHOLE
t					0.0					
									11	
5.							Bottom of boring at 54 feet.	54'	12	
							ttom due to fractured fragments.	-	-	



Attachment 2 - Photographic Log



Photographic Log

Client Name: HP, Inc.

Site Location: PR-3

PR-362, San German, PR

Project No. 01.0024065.20

Photo No.

Date: 3/7/2016

Direction Photo Taken:

N/A

Description:

Corroded transducer connection from well GZ-507R.



Photo No.

2

Date: 3/7/2016

Direction Photo Taken:

N/A

Description:

Corrosion visible inside the connections for the transducer at well GZ-507R.





Photographic Log

Client Name: HP, Inc.

Site Location: PR-362, San German, PR

Project No. 01.0024065.20

Photo No.

Date: 3/7/2016

Direction Photo Taken:

N/A

Description:

Corroded transducer connection from well GZ-507R.



Photo No.

4

Direction Photo Taken:

Date:

Description:

Corrosion visible inside the connections for the transducer at well GZ-508R.





Attachment 3 - Analytical Data Summary Table

ATTACHMENT 3

Summary of Groundwater Testing Results (u g/L) PREPA Off-Site Monitoring Wells Hewlett-Packard Voluntary Remediation Project San German, Puerto Rico

SAMPLE L & DA		Chloroform	1,1- Dichloroethane (DCA)	1,2-Dichloroethane	1,1-Dichloroethene	Trichloroethene (TCE)	Vinyl chloride	cis-1,2 Dichloroethene (DCE)	trans-1,2 Dichloroethylene
GZ-507L	Jun-02	2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Sep-02	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
C// 505D	Dec-02	0.26J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
GZ-507R	Mar-02 Jun-02	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 1.3	15 33	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0
	Sep-02	<1.0	<1.0	<1.0	<1.0	25	<1.0	0.11J	<1.0
	Dec-02	0.17J	<1.0	<1.0	0.24J	54	<1.0	1.1	<1.0
GZ-508L	Mar-02	20	<1.0	<1.0	<1.0	15	<1.0	<1.0	<1.0
	Jun-02	4.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Sep-02	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
GZ-508R	Dec-02	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 14	<1.0 <1.0	<1.0 1.1	<1.0
GZ-SUOK	Mar-02 Jun-02	<1.0	<1.0	<1.0	<1.0	16	<1.0	<1.0	<1.0 <1.0
	Sep-02	<1.0	<1.0	<1.0	<1.0	9.7	<1.0	0.83J	<1.0
	Dec-02	<1.0	<1.0	<1.0	<1.0	13	<1.0	1.8	<1.0
GZ-509U	Dec-02	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
GZ-509L	Mar-02	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Jun-02	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Sep-02 Dec-02	<1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0
GZ-509R	Mar-02	0.14J <1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
020071	Jun-02	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Sep-02	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Dec-02	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
GZ-510L	Mar-02	1.6	<1.0	<1.0	0.018J	59	<1.0	8.8	<1.0
	Jun-02	1.7	<1.0	<1.0	<1.0	60	<1.0	8.0	<1.0
	Sep-02 Dec-02	<2.5 0.85J	<2.5 0.97J	<2.5 <1.0	<2.5 0.49J	60	<2.5 0.5J	5.4 11	<2.5 0.24J
GZ-510R	Mar-02	<1.0	<1.0	0.087J	<1.0	1.3	0.14J	16	0.015J
	Jun-02	< 5.0	< 5.0	< 5.0	< 5.0	110	< 5.0	9.2	< 5.0
	Sep-02	<1.0	0.16J	<1.0	<1.0	14	0.23J	16	<1.0
	Dec-02	<1.0	0.46J	<1.0	<1.0	22	<1.0	24	<1.0
GZ-512L	Mar-02	10	<1.0	0.022J	<1.0	0.062J	<1.0	<1.0	<1.0
	Jun-02 Sep-02	1.9 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0
	Dec-02	0.26J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
GZ-512R	Mar-02	1.4	0.26J	<1.0	0.74J	42	0.95J	7.4	0.017J
	Jun-02	<1.0	<1.0	<1.0	2.8	40	<1.0	4.9	<1.0
	Sep-02	<1.0	0.96J	<1.0	3.3	15	0.76J	16	<1.0
GZ-513L	Dec-02 Mar-02	<1.0 6.1	2.1 <1.0	<1.0 <1.0	8.6 <1.0	14 <1.0	0.7J 0.024J	9.4	<1.0
GL-513L	Jun-02	<1.0	<1.0	<1.0	<1.0	<1.0 <1.0	<1.0	<1.0 <1.0	<1.0 <1.0
	Sep-02	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Dec-02	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
GZ-513R	Mar-02	3.1	<1.0	<1.0	<1.0	0.023J	<1.0	<1.0	<1.0
	Jun-02	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Sep-02	<1.0 <1.0	<1.0 <1.0	<1.0	<1.0	<1.0 0.38J	<1.0	<1.0	<1.0
	Dec-02	<1.0	<1.0	<1.0	<1.0	U.30J	<1.0	<1.0	<1.0

Notes:

- 1. All units are micrograms per liter (ug/L).
- "J" indicates the concentration reported was at or below the reporting limit.
- 3. " < " indicates the compound was not detected above the method quantification limit shown.
- 4. **Boldface** values reflect detected analytes.